DOCKET FILE COPY ORIGINAL

03-104

RECEIVED & INSPECTED

NOV 23 2004

FCC - MAILROOM

Marjorie Lundquist, Ph.D.
Bioelectromagnetic Hygienist
P. O. Box 11831
Milwaukee, WI 53211-0831

marlundquist@usa.net

November 15, 2004

Michael K. Powell, Chairman
Federal Communications Commission
445 – 12th Street, S.W.
Washington DC 20554

Dear Chairman Powell:

I apologize for being unable to fax my letter of October 28th to you promptly. I was using the U. S. Government Manual as my reference, and the only fax number given in there for the FCC was (866) 418-0232. I recognized this as a toll-free number, and anticipated that it might be in such heavy use that I wouldn't be able to get through on it—as did indeed turn out to be the case—so I e-mailed the FCC asking for a fax number that I could reach the Commissioners on. To this day I have received no reply to that inquiry!

The other day, I noticed that there was a fax number with the area code 202 on the FCC Web site and realized that ***that*** was probably the fax number I should have used. However, I hadn't visited the FCC Web site at that time, so was unaware of this fax number.

If I may make the suggestion, I advise that ***both*** fax numbers be published in the U. S. Government Manual. This past weekend, the FCC Web site was inaccessible (down for maintenance) so if I had wanted to find a fax number for the FCC this weekend, the only one I'd have been able to discover is the 866 one. [In this day of rapid electronic access to so much information, it is easy to forget that the old-fashioned paper-based archives are still indispensable—especially during a power outage!]

Now to the purpose of this letter. First of all, I have it on good authority that the FCC is going to be sued with respect to its action on BPL. (I'm not the one who will be suing, but I don't mind telling you that I have been encouraging a lawsuit against the FCC for its action on BPL, and if you have read my letter to you of October 28th, you will understand why I feel so strongly about halting BPL.)

I have studied the hazard to the health of living creatures (primarily mammals) for over twenty years, and have learned a lot about electromagnetic fields and electromagnetic field theory in that time. I'm sure I don't know as much about monitoring for FCC compliance as the people working for the FCC in its Office of Engineering and Technology do, but I think I probably know a bit more than they do about why one type of electromagnetic field poses a higher or lower hazard to mammalian health than another.

The major reason why I began my study of this about a quarter of a century ago was that I came to the conclusion that a major scientific error had pervaded the scientific research that had been done up to that point. I didn't know what the error was, or when it had occurred. But the experience I'd acquired while teaching myself computer programming convinced me that only by undertaking to derive biological exposure metrics from Maxwell's equations of electromagnetism

would I be able, eventually, to identify and correct the errors that had been made by electrical engineers and others who had attempted to establish safe limits for exposure to microwave and radio-frequency (RF) and other electromagnetic fields in the non-ionizing part of the spectrum.

I've worked on this for a number of years, but in 2004 had finally accomplished enough that I presented a paper on this topic at the June meeting of the Bioelectromagnetics Society (BEMS) which took place in Washington, DC, five months ago. Dr. Robert Cleveland, an FCC employee in the Office of Engineering and Technology, is active in this organization and attended the meeting, but I don't think he took the time to study my poster paper presented at this meeting.

In my poster paper I provided a mathematical basis for a variety of assertions. What it all means, in a nutshell, is that *existing voluntary consensus standards for protection against radio-frequency electromagnetic fields/radiation are **inadequate** to protect mammalian health completely!* In other words, it is possible to comply with these voluntary consensus standards (and also with the FCC emission regulations) but *still* have people get sick from the exposure they experience!

In the foregoing sentence, I had in mind the electromagnetic field generated by a transmitting antenna. Electrical engineers call this an "efficient antenna field". When radio-frequency currents are present on electric wires, such as a long electric power line, a very *different* kind of electromagnetic field is generated, one that electrical engineers call an "inefficient antenna field".

Power line carrier (PLC) and broadband on power lines (BPL) both generate an "inefficient antenna field" around the electrical wire. My investigation has satisfied me that, when all other factors (such as input power and frequency) are equivalent, an "inefficient antenna field" will be ***much*** more hazardous to health than an "efficient antenna field"!

Not only do these two types of field pose different degrees of hazard to mammalian health, they also pose different challenges when it comes to the task of making a meaningful measurement of the hazard or risk that they pose. We know how to take measurements on efficient antenna fields but there are unsolved difficulties associated with doing this on inefficient antenna fields.

I rather hastily assembled the information on the enclosed sheet at the end of October, after the FCC had issued its announcement that was intended to give free rein to anyone who wanted to implement BPL. I wanted to make it apparent that we have enough scientific information ***right now*** to say that it can be predicted that BPL will pose a health hazard to people, if they spend much time close to wires that carry it. Since electric power lines supply electricity to almost every residence and place of work in the USA, this means that ***almost every human being*** in the USA is going to be exposed to the radio-frequency fields generated by BPL, wherever BPL is deployed. So the FCC is proceeding to let loose on the residents of the USA a horrific hazard to their health!

There is ***already*** too much high-frequency current on building electrical wiring—***more*** than is compatible with good health! The still unpublished report by Dr. Daniel Muller, referred to in the enclosed sheet, makes this clear. With people *already* suffering ill health because of the RF current on the electrical wiring in their homes, the FCC is now acting to add ***still more*** of this *RF pollution*, at even ***higher*** (thus ***more damaging***) frequencies!

If effective action is not taken by the American people, the FCC will sicken us all. (Does the FCC think that health care costs are not yet high enough? Most people and organizations I talk to think that health care costs are *much too high!* Yet it hasn't dawned on them that the way to drive health care costs down, long-term, is to reduce the incidence of sickness in the population. It is apparent to me that, here in Wisconsin, illness related to the electric power system has been on the rise for several decades. Complaints to the Public Service Commission of Wisconsin, the state agency that regulates electric utilities, are ineffective for a variety of reasons, one being that this state agency has asserted that it has no legal authority to regulate RF on electric power lines, because that authority resides with the FCC.

The situation in Wisconsin is not much different from the situation in other states. I happen to be most familiar with the situation in Wisconsin because I live in Wisconsin and therefore have paid attention to what has been happening here.

At present, companies providing electric power to their customers in the state of Wisconsin are spreading disease throughout the state. Their electrical distribution lines are functioning as *vectors of disease!*

It doesn't have to be this way! A hundred years ago, electric power was healthful: electric power lines were ***not*** vectors of disease, and electricity—apart from its electrocution hazard—was *entirely beneficial* to the population!

This is ***not*** true ***today!*** The primary need of the American people at this time, with respect to electric power, is *electricity that is **not** hazardous to mammalian health!* What we need is ***less*** *high-frequency and RF pollution on our electric power lines,* ***not more!***

At present, the principal sources of RF pollution on building electrical wiring are the electrical appliances and other electrical equipment in the building that constitute the customer's electrical load, because the design of such electrical equipment since the middle 1970s is such as to ensure that most of it constitutes a ***nonlinear electrical load*** on the system. Electric power companies do generate *some* RF pollution (at substations, such as by the switching of capacitor banks, for example), but the greatest amount originates from the customer's own electrical equipment that behaves as a nonlinear load. Computers, television sets, and dimmer switches are the most common examples of equipment that constitutes a nonlinear load. Under these circumstances, if the customer installs trapping filters to isolate the high frequencies and keep them off the electrical wiring in the building, the customer accomplishes two things: he improves the quality of the electrical environment inside the building, which helps to ensure that the environment inside the building is not harmful to health; and in doing so, he prevents his building and the equipment inside it from becoming a source of RF pollution on the distribution wires belonging to the electric company that supplies his electricity!

To demonstrate that I am discussing a real-world problem, and not a hypothetical one, I enclose copies of two newspaper stories about what happened in two schools in rural western Wisconsin. together with an essay written by the principal of one of the schools. In both schools, the introduction of capacitors that trap RF resulted in a rapid and widespread improvement in the health of the teachers, students and staff at the school. Angela Olstad's essay makes it exceedingly clear that the installation of the capacitor filters produced a ***prompt outbreak of good health!***

Now consider what the situation would be with BPL in use. The electric power company would then be delivering ***seriously RF-polluted electric power*** over its distribution lines to ***all its customers!*** Based on experience to date, I can confidently predict that a prompt decline in the health of most customers would occur, because the RF-polluted electric power would now be present on both electrical distribution lines and on the building electrical wiring of customers' homes and office buildings and factories. These electrical distribution wires would now be functioning as ***vectors of disease***, and customers would have a legitimate reason for suing their electric power company for providing them electric power of such ***poor quality*** as to render their homes ***unfit for human habitation!***

Now, you may want to know whether there is any way that BPL can be implemented in a manner that is safe, and does not threaten the health of people. The answer is a qualified *yes* (or a qualified *no*, depending on your viewpoint). But this topic is becoming too technical for discussion by letter. I suggest that the FCC, if it is interested in exploring these issues further, consider taking steps to ensure the education of its technical personnel in this area. Otherwise, the FCC will risk seriously endangering the health of almost all Americans in the years ahead.

The Islamic terrorists are bad enough! We certainly *don't* need the agencies of our government behaving toward us like terrorists, too!

Yours for a more healthful environment,

Marjorie Lundquist

Marjorie Lundquist, Ph.D.
Bioelectromagnetic Hygienist

Enc.: copy of my letter of November 12, 2004, to Michael D. Gallagher, NTIA
fact sheet (compiled by Marjorie Lundquist)
story published February 12, 2004, in the **Melrose Chronicle** (Wisconsin)
essay by Angela Olstad, building principal and 4th grade teacher, Mindoro school (WI)
story published September 13, 2004, in the **West Salem Coulee News** (Wisconsin)

xc: Mike Leavitt, EPA Administrator
Norbert Hankin, EPA
Joseph Bowman, Ph.D., Head, Non-Ionizing Radiation Research, NIOSH, Cincinnati, OH

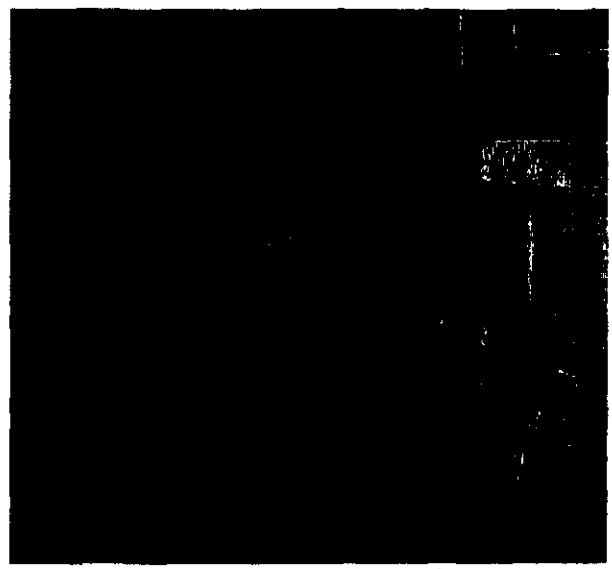
The Chronicle

Print Page

Published - Thursday, February 12, 2004

Electrical pollution takes its toll on school

by Ken Luchterhand of the Chronicle



Angela Onstad, teacher and principal at Melrose-Mindoro Elementary, Mindoro, shows an electrical filter in her left hand and an Rf meter in her right hand. Ideally, the Rf meter should show below 50 for a healthy environment. Chronicle photo by Ken Luchterhand

Angela Olstad almost quit being a fourth grade teacher and principal.

Although she loved her job at the Mindoro school, she couldn't handle being sick so often.

The whole right side of her body went numb. She had terrible headaches, vision problems and felt completely exhausted at the end of a work day.

She had never been able to teach for an entire week without calling in sick. This had gone on more than two years.

She was about to quit when a cause had been found for her illness - electrical pollution.

Electrical filters soon were placed throughout the school and now she says she feels better than ever.

She's not the only person making these claims. Several other teachers have been convinced of the electrical pollution theory and swear to its authenticity.

"I feel better," said teacher Sharon Kaczrowski. "All my sinus problems are gone. I was always fighting a sinus infection before."

Teacher Aide Dawn Rand agrees, and said she used to experience chest pains and sinus problems. Before, when she walked up the stairs, she could hardly breathe. Since the filters have been installed, she hasn't had any chest pains and her sinuses have cleared.

"I'm definitely a believer," Rand said. "I have them installed in my home now."

Olstad has worked for the Melrose-Mindoro School District for 15 years. She worked at the Melrose building as a kindergarten teacher for 10 years, then switched to the Mindoro building five years ago, when she began teaching fourth grade.

That's when the health problems began surfacing.

At the end of October during her first year, her whole right side went numb, a problem that continued for four months. Her ability to think became difficult and she always felt exhausted. She began to see double at the end of the second year.

Meanwhile, Administrator Ron Perry was trying to find out what was causing her illness. State inspectors came to the school and, after some analysis, they determined it was being caused by mold.

During the summer, the school was completely cleaned, including the heating ducts, tunnels and ceiling tiles. It cost the district about $100,000, she said.

Olstad's health improved during the summer because she spent time away from her classroom.

However, when she returned to her third year at Mindoro, the symptoms returned. The numbness on one side of her body returned.

"I need to be out of this room," she told herself. "There must be something that was skipped."

She told Perry about the return of her health problems and her classroom was completely stripped and cleaned. Everything was bleached.

"My students were in a traveling classroom for a month while they tore my classroom apart," Olstad said.

She had been to a general practitioner physician, an allergist and an eye doctor. A neurologist at Mayo Clinic diagnosed her as having benign multiple sclerosis.

"I had never been so sick in my life," she said. "It even hurt to put my head on the pillow at night."

The sickness was so great, she was ready to quit teaching.

Then, early one morning Perry and Melrose-Mindoro District Board of Education President Bob Hardie came to the school to hold a meeting. They told the group of teachers they think they know what the problem might be.

The only thing that had changed over the years, they explained, was the amount of electricity used by the school. More computers and other electrical devises increased the demand for electricity.

The culprit: electrical pollution emanating from the electrical wiring, they concluded.

"I didn't want to believe it," Olstad said. "I was the biggest skeptic there."

Dave Stetzer of Stetzer Electric, Blair, was contracted to isolate the problem and make any adjustments to alleviate the problem. Stetzer found the amount of radio frequency electromagnetic fields were too high, so he installed electrical filters in every outlet.

Besides the Mindoro school, the Melrose-Mindoro High School and the Melrose school also were fitted with filters.

Weeks after the filter installation, Olstad and other teachers began to report they felt much better. Even students were in better health, she said.

Before the problem was diagnosed, 37 children were on inhalers. Now, only five children are using inhalers.

"I haven't had a headache since. I have never felt this good," Olstad said. "Some people come here feeling bad and when they leave at the end of the day, they are feeling good."

The temperature in the computer lab dropped 20 degrees since the filters have been installed, yet the thermostat hasn't been changed.

Many of the teachers have installed electrical filters in their homes. Each filter costs $25 and it usually takes 20 for an average house, Olstad said.

Stetzer recently spoke before the Wisconsin School Board convention about the hazards of electrical pollution. Blair-Taylor, CFC, Brighton and Marshfield schools now have filters installed at each school building.

Rep. Barbara Gronemus (D) - Whitehall has introduced legislation (bill AB529) that would require something done about electrical pollution.

"It's time they do something," Olstad said. "What is it doing to our children?"

No one from Xcel Energy, the supplier of electricity to the school, would speak on the subject.

Also, no doctor could be located who would speak on the validity of electrical pollution's affects on health.

"It has changed so many lives," Olstad said. "I'm so thankful that the filters have been installed. The cost is so minimal considering the benefits."

Explainable Health Conditions

Written By: Angela Olstad
Mindoro Fourth Grade Teacher/Building Principal

Many people in the Melrose-Mindoro School District are feeling better because of the recent electrical clean up in our schools. This problem is known as electrical pollution. The staff suffered from unexplainable health conditions for years. The list of symptoms includes: fatigue, memory loss, facial flushing, rashes, headaches, numbness, eye irritation, depression, sleep disturbances, double vision, asthma difficulties, sinus infections, bronchitis, loss of taste and smell. These health conditions began when school started and gradually went away throughout the summer months.

Mr. Dave Stetzer, a power quality manager, was hired to evaluate the electrical condition of our schools. He found many problems in the electrical system. The ubiquitous meter readings should have been zero, but our school had numbers as high as 150+. Dr. Martin Graham a professor from University of California, Berkeley has defined ubiquitous pollution. Dr. Neil Cherry a professor from Lincoln University says a safe level of exposure to RF (radio frequency) is zero. To clean up the electrical pollution the electricians rewired the computer lab and put filters into the many outlets throughout our building. This took a few days and the costs were minimal. Yes, it was that easy. The readings in the building are now averaging 15 or below. An acceptable level could be below 20. The Mindoro Elementary School, for example, is 36 years old. The wiring in those days does not stand up to the demands of today. The demand on electrical wiring is growing rapidly everyday, everywhere.

Mr. Stetzer has also evaluated the electrical condition for Blair-Taylor, Marshfield, Cochrane Fountain City, and Brighten Schools. These schools are now living the benefits from their electrical clean up. Problems were also found in the Spencer School District.

The results are incredible- healthy people! Staff attendance has improved greatly, and students are now being called their right names. Every symptom above is gone or has improved significantly. Once again we enjoy teaching.

The students are also benefiting from the electrical clean up. The school nurse has documented no need for the commonly used asthma nebulizer and inhaler use is down. In addition the attitude and effort of the students has improved.

It is important that if you or others you know are having these same symptoms that you do something about it. Do not let these problems ruin your life. The Melrose-Mindoro School District is very lucky, the school board and superintendent came to us with this information. In order to get the help needed talk to your school

administrators about electrical pollution until they listen. Do the research and know the facts.

Yes, electrical companies deny this is happening, but soon they will have to open their eyes and admit there is a problem. People are suffering for no reason. Are you one of those people? Electrical pollution can be cleaned up and help is available, affordable and necessary. Do not let another day go by without doing something to help yourself and those around you. Insist that your schools get checked for electrical pollution so you can start feeling better today. Your health can improve that quickly, ours did.

For further information - DAVE@STETZERELECTRIC.COM - OLSTAD@MEL-MIN.K12.WI.US
- ELECTRICALPOLLUTION.COM - POWERLINEFACTS.COM

West Salem Coulee News Online Print Page

Story originally printed in the Coulee News or online at http://www.couleenews.com

Published - Monday, September 13, 2004

Bangor School District spends $15,000 on electrical filters

By EMILY WILSON Coulee News Writer

In hopes of improving the health of its students and faculty, the Bangor School District recently installed filters to reduce electrical pollution in its schools.

Bangor School District Superintendent John Wyatt said the district spent about $15,000 to purchase close to 500 electrical filters which have been placed in outlets throughout the schools.

An excess of electrical pollution, also known as radio wave sickness, is often blamed as culprit of "flu-like" symptoms, as well as depression, numbness, attention-deficit-disorder and anxiety.

Area school districts including Melrose-Mindoro, Cochrane-Fountain City, Blair-Taylor, Brighton and Marshfield have already installed electrical filters in its schools.

"I think we're joining with a growing number of schools in the area that's convinced there's a possible relationship with the symptoms people feel and these electrical impulses that come off of these computers and other sources of electricity," Wyatt said.

Melrose-Mindoro installed its filters two years ago. Wyatt said changes that the district has seen since installing the filters made a big impact on the school board's 5-2 decision to install the filters in Bangor.

Many teachers reported symptoms they had experienced before the filters were installed had disappeared.

Furthermore, 37 children were on inhalers before installation of the filters. Shortly after the installation, only five children were using inhalers.

"There's enough evidence in other schools to feel this is something we should do," Wyatt said.

The two school board members who voted against the filters said it was a lack of evidence that there's a correlation between electrical pollution and illnesses that caused them to vote how they did.

"People are buying into it and there's not much to go on," board member Tom Arentz explained.

Arentz said another reason he voted against it is because the school board would normally get a second estimate in a situation like this one. However, the manufacturer of the filters, Stetzer Electric in Blair, is the only business in the area that manufactures these filters.

Board member Curt Pierce said he didn't feel comfortable supporting the proposition.

"I didn't find any real science to back it up," Pierce said.

Wyatt said the district will be able to determine the filters' effectiveness in about six months after reviewing attendance records.

Marjorie Lundquist, Ph.D.
Bioelectromagnetic Hygienist
P. O. Box 11831
Milwaukee, WI 53211-0831

marlundquist@usa.net

November 12, 2004

Michael D. Gallagher, Acting Assistant Secretary for Communications & Information
National Telecommunications and Information Administration
U. S. Department of Commerce
14th Street & Constitution Avenue, N.W.
Washington DC 20230

Dear Mr. Gallagher:

Today I briefly glanced at a report **Potential Interference from Broadband over Power Line (BPL) Systems to Federal Government Radiocommunications at 1.7-80 MHz** (Phase I) that came out last April over your signature. I noted that NTIA had found serious interference with federal communications from BLP to be present.

Your report considered only interference with radio communications. There is another type of electromagnetic interference with extremely serious consequences that neither NTIA nor any other agency has considered; that is the interference that occurs in those electrochemical systems "engineered" by Mother Nature (or God, or evolution): living creatures. Mammals seem to be especially susceptible, which means human beings are likely to be adversely affected.

When BPL interferes with radio-frequency communications, meaningful information becomes gibberish. When BPL "interferes" with the subtle electrochemical intercellular and intracellular communications systems of mammals, meaningful information is altered, leading to any of a wide variety of errors: alteration of a signal transmitted by the nervous system, biosynthesis of a chemical that is almost but not exactly what it should have been, or perhaps a slight alteration in a gene during mitosis or meiosis. Collectively, the results of such errors manifest themselves as "adverse health effects".

The U.S. Environmental Protection Agency had a program of study of radio-frequency health effects, but Congress shut it down about 1995. The country now has no program to study adverse health effects resulting from exposure to radio-frequency radiation. All studies of health effects associated with electric power lines have focussed on the large 60-Hz fields that are present, ignoring all radio-frequency (RF) fields that may be present, on the assumption that they are negligibly small.

Curiously, the final report from the National Research Council (in response to the Congressional request to the Academy of Sciences of the USA for review of the scientific evidence of harmful health effects from the 60-Hz fields around electric power lines, made because the public was very suspicous that the fields around electric power lines are hazardous to human health), while exonerating 60-Hz fields, confirmed that there does indeed seem to be evidence of a hazardous field around electric power lines, and identified electrical transients as a probable cause! But no one seems to have noticed this report. (Transients are high-frequency pulses; their frequencies may reach into the radio-frequency portion of the electromagnetic spectrum.) [See the enclosed sheet for a citation to this document.]

The NRC report has had little attention paid to it because the National Academy of Sciences issued a highly misleading news release when the report first came out: the conclusion exonerating 60-Hz fields was highly publicized, but the other important finding was not mentioned.

I have studied the NRC report and find it to be thorough and accurate. Congress, when it made its request, ***assumed*** that any health hazard that might be present around electric power lines because of the electromagnetic field that is present would be ***caused*** by the 60-Hz field; ***this is not the case***, the Committee that authored the report found. The Committee had not been charged with determing the cause of the unhealthfulness of the field around electric power lines, but its members proceeded to take several steps in this direction anyway, because it was in the public interest. What they concluded is consistent with the idea that the presence of radio frequencies on electric power lines is what makes the fields around these power lines hazardous to human health. Nevertheless, ***no studies have been done*** of the health effects attributable to the radio-frequency fields that exist around electric power lines having *power line carrier* or *BPL* on them!

Many scientific studies have been done to try to associate human health effects with 60-Hz field measurements, but the results change over time, and with changes in the geographical area where the study is done. If ever a study were done that tried to associate health effects with the radio-frequency field around the current-carrying wire, it seems likely that consistent results would be obtained. A pair of Italian scientists* has pointed out the need for such studies in a published paper, but no government has responded. I myself submitted extensive comments to the NIEHS in 1998; these comments are posted on the Internet at <www.niehs.nih.gov/emfrapid/html/EMF_DIR_RPT/Dir_Comments/CD_Files/VOL3/emf3_103.pdf>.

There are quite a few people in this country who are unhappy with this state of affairs, especially since we believe that careful study of the potential hazards to human health from the presence of RF on electric power lines and building electrical wiring—whether from power line carrier (in the frequency range from 3 to 500 kHz) or from BPL (in the frequency range from 2 to 80 MHz, according to the ARRL) or simply from transients, which can be present in profusion when the quality of the electric power is especially poor—would reveal a wide range of health effects in human beings resulting from chronic exposure in homes or offices. These effects can range from disabling effects such as chronic fatigue syndrome, up to and including death of children. See the enclosed sheet for a hastily assembled set of known scientific facts about biological/health effects. (There is additional anecdotal and unpublished information that is quite alarming.) A legal challenge to the FCC regarding BPL—alleging failure to comply with NEPA—is likely.

* M. Vignati & L. Giuliani
Radiofrequency exposure near high-voltage lines
Environmental Health Perspectives 105
(Dec. 1997) Supplement 6:1569-1573.

Yours for a more healthful environment,

Marjorie Lundquist

Marjorie Lundquist, Ph.D.
Bioelectromagnetic Hygienist

Enc.: fact sheet on health effects

xc: Michael K. Powell, Chairman, FCC
Kathleen Q. Abernathy, Commissioner, FCC
Michael J. Copps, Commissioner, FCC
Kevin J. Martin, Commissioner, FC
Jonathan S. Adelstein, Commissioner, FCC
Edward J. Thomas, Chief, OET, FCC
Mike Leavitt, Administrator, EPA
Norbert Hankin, EPA

IS BROADBAND ON POWER LINES *SAFE?*

THE AVAILABLE SCIENTIFIC EVIDENCE SUGGESTS THAT THE ANSWER IS *"NO!"*

by
Marjorie Lundquist, PhD, The Bioelectromagnetic Hygiene Institute, P.O. Box 11831, Milwaukee WI 53211-0831

According to information posted on the ARRL Web site, broadband on power lines uses frequencies between 2 MHz and 80 MHz.

The effect on the health of mice in the laboratory of exposure to a uniform electromagnetic field at different frequencies from 8.3 MHz to 135 MHz was shown to be highly damaging to them: if strong enough, the field would kill them (after producing electrodessication), while a field of reduced intensity produced leakage of blood from capillaries.

SOURCE: J. W. Schereschewsky
The physiological effects of currents of very high frequency (135,000,000 to 8,300,000 cycles per second) [in modern terms, this frequency range is from 8.3 MHz to 135 MHz]
Public Health Reports 41(September 10, 1926):1939-1963.

According to the published scientific evidence from laboratory experiments, most of the frequencies employed by broadband on power lines have ***already*** demonstrated that they damage mammalian health!

WHAT ABOUT **HUMAN** *HEALTH?*

The quality of electric power has deteriorated steadily throughout the 20th century. One result is the growing presence of large numbers of transients, which consist of high frequencies.

In the early 1990s, Congress asked the National Academy of Sciences to examine the scientific evidence that the 60-Hz fields around electric power lines cause illness, because of many complaints from the public that the fields around electric power lines were producing disease in the people who lived close to such power lines.

The final report was published as a book by the National Academy Press in Washington, D.C., in 1997; its title was:

Possible Health Effects of Exposure to Residential Electric and Magnetic Fields.

The National Research Council established the Committee on the Possible Effects of Electromagnetic Fields on Biologic Systems to review the scientific literature and prepare a final report. The Committee concluded that there was no scientific evidence that 60-Hz fields produced any illness in human populations, but there was robust evidence that something associated with electric power lines was consistently associated with, and might be causing, childhood leukemia!

The best candidate for what might be causing childhood leukemia, in the Committee's judgment, was transients on the electric power lines and on the residential electrical wiring: in other words, ***high frequencies on the electrical system***

A recent experiment, the results from which were first publicly reported October 9, 2004,
by Daniel Muller, M.D., Ph.D., Associate Professor of Medicine,
University of Wisconsin School of Medicine, Madison, Wisconsin,
at the annual conference of the Association for Chronic Fatigue Syndrome, at the workshop

The Effects of Reducing Electrical Pollution on Symptom Severity in CFS/FM Patients

show that the high frequencies now present on building electrical wiring
are ***already*** producing adverse health effects on building residents
that have heretofore gone unrecognized.

(Could this be one reason that health care costs in our society today are so high?)

Dr. Muller reported that on 4 different measures, a "double-blind randomized cross-over study" in which each subject acted as her own control produced results that ***were both statistically and clinically significant***, showing that existing high frequencies on the building electric wiring ***did indeed have an effect on the health of residents!***

The subjects of this study were homebound people (to ensure that their home environment would characterize their electrical exposure). Dr. Muller reviewed their medical charts to ensure that they met his criteria for inclusion in the study; those selected were suffering from chronic fatigue syndrome (CFS) and/or from fibromyalgia (FM). The high-frequency component of current on the household electrical system was either left at existing levels, or was reduced by introducing large capacitors (which acted as a high-frequency filter that greatly reduced the high frequencies) across the "hot" and "neutral" wires of the electrical system. (In practice, the capacitors were installed in each subject's home by a participating electrician, such that the capacitors could be introduced or removed from the circuitry very simply.)

An individual not otherwise involved in the study visited each residence and "set" the capacitors at random, making a record of the setting, at the time the experiment began in that house. After a week or two had passed, he returned to that residence and reversed the capacitor setting. (This ensured that the experiment was blinded for everyone involved.) After another week or two had passed, the experiment was over for that household; he returned again and set the capacitors in accordance with the preference of the study subject who resided there.

During the two weeks that the study continued, the subject periodically answered questions about her health. She did not know how the capacitors had been set, of course.

The subjects of this study were already ill; the experiment was carried out, in part, to determine whether introduction of the capacitors, to reduce the high-frequency current component on the building's electric wiring, would improve the health of the ill residents. The results of this experiment confirmed that the presence of the capacitors ***did*** have an effect on the health of the human subject. Since this study was completed, some of the subjects have spoken out in public about the beneficial effects on their health of having these capacitors in their homes.

WILL BROADBAND ON POWER LINES *MAKE PEOPLE SICK?*

Probably ***it will!***

THE FCC HAS DECIDED TO BEGIN A *HUMAN EXPERIMENT!*

Marjorie Lundquist, Ph.D.
Bioelectromagnetic Hygienist
P. O. Box 11831
Milwaukee, WI 53211-0831

marlundquist@usa.net

November 15, 2004

Kathleen Q. Abernathy, Commissioner
Federal Communications Commission
445 – 12th Street, S.W.
Washington DC 20554

Dear Commissioner Abernathy:

For your information, I have it on good authority that the FCC is going to be sued with respect to its action on BPL. (I'm not the one who will be suing, but I don't mind telling you that I have been encouraging a lawsuit against the FCC for its action in approving BPL. If Chairman Powell has shared with you my letter to him of October 28th, you will understand why I feel so strongly about halting BPL.)

I have studied the hazard to the health of living creatures (primarily mammals) for over twenty years, and have learned a lot about electromagnetic fields and electromagnetic field theory in that time. I'm sure I don't know as much about monitoring for FCC compliance as the people working for the FCC in its Office of Engineering and Technology do, but I think I probably know a bit more than they do about why one type of electromagnetic field poses a higher or lower hazard to mammalian health than another.

The major reason why I began my study of this about a quarter of a century ago was that I came to the conclusion that a major scientific error had pervaded the scientific research that had been done up to that point. I didn't know what the error was, or when it had occurred. But the experience I'd acquired while teaching myself computer programming convinced me that only by undertaking to derive biological exposure metrics from Maxwell's equations of electromagnetism would I be able, eventually, to identify and correct the errors that had been made by electrical engineers and others who had attempted to establish safe limits for exposure to microwave and radio-frequency (RF) and other electromagnetic fields in the non-ionizing part of the spectrum.

I've worked on this for a number of years, but in 2004 had finally accomplished enough that I presented a paper on this topic at the June meeting of the Bioelectromagnetics Society (BEMS) which took place in Washington, DC, five months ago. Dr. Robert Cleveland, an FCC employee in the Office of Engineering and Technology, is active in this organization and attended the meeting, but I don't think he took the time to study my poster paper presented at this meeting.

In my poster paper I provided a mathematical basis for a variety of assertions. What it all means, in a nutshell, is that *existing voluntary consensus standards for protection against radio-frequency electromagnetic fields/radiation are **inadequate** to protect mammalian health completely!* In other words, it is possible to comply with these voluntary consensus standards (and also with the FCC emission regulations) but *still* have people get sick from the exposure they experience!

In the foregoing sentence, I had in mind the electromagnetic field generated by a transmitting antenna. Electrical engineers call this an "efficient antenna field". When radio-frequency currents are present on electric wires, such as a long electric power line, a very *different* kind of electromagnetic field is generated, one that electrical engineers call an "inefficient antenna field".

Power line carrier (PLC) and broadband on power lines (BPL) both generate an "inefficient antenna field" around the electrical wire. My investigation has satisfied me that, when all other factors (such as input power and frequency) are equivalent, an "inefficient antenna field" will be ***much*** more hazardous to health than an "efficient antenna field"!

Not only do these two types of field pose different degrees of hazard to mammalian health, they also pose different challenges when it comes to the task of making a meaningful measurement of the hazard or risk that they pose. We know how to take measurements on efficient antenna fields but there are unsolved difficulties associated with doing this on inefficient antenna fields.

I rather hastily assembled the information on the enclosed sheet at the end of October, after the FCC had issued its announcement that was intended to give free rein to anyone who wanted to implement BPL. I wanted to make it apparent that we have enough scientific information ***right now*** to say that it can be predicted that BPL will pose a health hazard to people, if they spend much time close to wires that carry it. Since electric power lines supply electricity to almost every residence and place of work in the USA, this means that ***almost every human being*** in the USA is going to be exposed to the radio-frequency fields generated by BPL, wherever BPL is deployed. So the FCC is proceeding to let loose on the residents of the USA a horrific hazard to their health!

There is ***already*** too much high-frequency current on building electrical wiring—***more*** than is compatible with good health! The still unpublished report by Dr. Daniel Muller, referred to in the enclosed sheet, makes this clear. With people *already* suffering ill health because of the RF current on the electrical wiring in their homes, the FCC is now acting to add ***still more*** of this *RF pollution*, at even ***higher*** (thus ***more damaging***) frequencies!

If effective action is not taken by the American people, the FCC will sicken us all. (Does the FCC think that health care costs are not yet high enough? Most people and organizations I talk to think that health care costs are *much too high!* Yet it hasn't dawned on them that the way to drive health care costs down, long-term, is to reduce the incidence of sickness in the population. It is apparent to me that, here in Wisconsin, illness related to the electric power system has been on the rise for several decades. Complaints to the Public Service Commission of Wisconsin, the state agency that regulates electric utilities, are ineffective for a variety of reasons, one being that this state agency has asserted that it has no legal authority to regulate RF on electric power lines, because that authority resides with the FCC.

The situation in Wisconsin is not much different from the situation in other states. I happen to be most familiar with the situation in Wisconsin because I live in Wisconsin and therefore have paid attention to what has been happening here. At present, companies providing electric power to their customers in the state of Wisconsin are spreading disease throughout the state. This means that their electrical distribution lines are functioning as *vectors of disease!*

It doesn't have to be this way! A hundred years ago, electric power was healthful: electric power lines were ***not*** vectors of disease, and electricity—apart from its electrocution hazard—was *entirely beneficial* to the population!

This is ***not*** true ***today!*** The primary need of the American people at this time, with respect to electric power, is *electricity that is **not** hazardous to mammalian health!* What we need is ***less** high-frequency and RF pollution on our electric power lines, **not more!***

At present, the principal sources of RF pollution on building electrical wiring are the electrical appliances and other electrical equipment in the building that constitute the customer's electrical load, because the design of such electrical equipment since the middle 1970s is such as to ensure that most of it constitutes a ***nonlinear electrical load*** on the system. Electric power companies do generate *some* RF pollution (at substations, such as by the switching of capacitor banks, for example), but the greatest amount originates from the customer's own electrical equipment that behaves as a nonlinear load. Computers, television sets, and dimmer switches are the most common examples of equipment that constitutes a nonlinear load. Under these circumstances, if the customer installs trapping filters to isolate the high frequencies and keep them off the electrical wiring in the building, the customer accomplishes two things: he improves the quality of the electrical environment inside the building, which helps to ensure that the environment inside the building is not harmful to health; and in doing so, he prevents his building and the equipment inside it from becoming a source of RF pollution on the distribution wires belonging to the electric company that supplies his electricity!

To demonstrate that I am discussing a real-world problem, and not a hypothetical one, I enclose copies of two newspaper stories about what happened in two schools in rural western Wisconsin. together with an essay written by the principal of one of the schools. In both schools, the introduction of capacitors that trap RF resulted in a rapid and widespread improvement in the health of the teachers, students and staff at the school. Angela Olstad's essay makes it exceedingly clear that the installation of the capacitor filters produced a ***prompt outbreak of good health!***

Now consider what the situation would be with BPL in use. The electric power company would then be delivering ***seriously RF-polluted electric power*** over its distribution lines to ***all its customers!*** Based on experience to date, I can confidently predict that a prompt decline in the health of most customers would occur, because the RF-polluted electric power would now be present on both electrical distribution lines and on the building electrical wiring of customers' homes and office buildings and factories. These electrical distribution wires would now be functioning as ***vectors of disease***, and customers would have a legitimate reason for suing their electric power company for providing them electric power of such ***poor quality*** as to render their homes ***unfit for human habitation!***

You may want to know whether there is any way that BPL can be implemented in a manner that is safe, and does not threaten the health of people. The answer is a qualified *yes* (or a qualified *no*, depending on your viewpoint). But this topic is becoming too technical for discussion by letter. I suggest that the FCC, if it is interested in exploring these issues further, consider taking steps to ensure the education of its technical personnel in this area. Otherwise, the FCC will risk seriously endangering the health of almost all Americans in the years ahead.

I appreciate your interest in putting the benefits of high technology at the disposal of *all* Americans equally, and as soon as possible, Commissioner Abernathy. We need people in government who are willing to support change. BPL does indeed offer a glorious, if one-sided, vision of the future.

But please remember that there are two sides to every coin. Only 110 years ago, the world was electrified by a report of the discovery of X-rays, which can make visible the skeleton of a living person. The benefit from X-rays was immediately obvious.

Did you know that a number of people were horribly injured by X-rays, before the hazard to human health that they pose became evident? Some individuals died early, horrible deaths from chronic exposure to X-rays.

An eager desire for benefits must be tempered with care, concern, and caution, if we are to avoid doing unintended damage. This is why the lawsuit that will be filed against the FCC regarding BPL may turn out to be a blessing in disguise.

When you read the enclosed newspaper stories of how forward-looking citizens in rural communities in Wisconsin have improved the health of those using the local school, think for a minute of the No Child Left Behind Act, and realize that some children may be doing poorly in school ***not*** because the school is doing a poor job of teaching, but because the electrical environment in the school may be interfering with learning! The schools in these stories won't have any interest in BPL, because they have learned what kind of problems it will cause; they will be wise enough to arrange for their access to the Internet to be delivered in a ***safe and healthful*** manner, not by BPL.

Do you think the FCC should be "pushing" BPL on the unsuspecting Americans in other schools that have not yet learned just how hazardous to health RF pollution of electric power is? Radiofrequency fields act very much like drugs, in some ways. Please don't let the FCC become the equivalent of a "drug pusher" for America!

Yours for a more healthful environment,

Marjorie Lundquist

Marjorie Lundquist, Ph.D.
Bioelectromagnetic Hygienist

Enc.: copy of my letter of November 12, 2004, to Michael D. Gallagher, NTIA
fact sheet (compiled by Marjorie Lundquist)
story published February 12, 2004, in the **Melrose Chronicle** (Wisconsin)
essay by Angela Olstad, building principal and 4th grade teacher, Mindoro school (WI)
story published September 13, 2004, in the **West Salem Coulee News** (Wisconsin)

xc: Mike Leavitt, EPA Administrator
Norbert Hankin, EPA
Joseph Bowman, Ph.D., Head, Non-Ionizing Radiation Research, NIOSH, Cincinnati, OH

Marjorie Lundquist, Ph.D.
Bioelectromagnetic Hygienist
P. O. Box 11831
Milwaukee, WI 53211-0831

marlundquist@usa.net

November 15, 2004

Kevin J. Martin, Commissioner
Federal Communications Commission
445 – 12th Street, S.W.
Washington DC 20554

Dear Commissioner Martin:

For your information, I have it on good authority that the FCC is going to be sued with respect to its action on BPL. (I'm not the one who will be suing, but I don't mind telling you that I have been encouraging a lawsuit against the FCC for its action in approving BPL. If Chairman Powell has shared with you my letter to him of October 28th, you will understand why I feel so strongly about halting BPL.)

I have studied the hazard to the health of living creatures (primarily mammals) for over twenty years, and have learned a lot about electromagnetic fields and electromagnetic field theory in that time. I'm sure I don't know as much about monitoring for FCC compliance as the people working for the FCC in its Office of Engineering and Technology do, but I think I probably know a bit more than they do about why one type of electromagnetic field poses a higher or lower hazard to mammalian health than another.

The major reason why I began my study of this about a quarter of a century ago was that I came to the conclusion that a major scientific error had pervaded the scientific research that had been done up to that point. I didn't know what the error was, or when it had occurred. But the experience I'd acquired while teaching myself computer programming convinced me that only by undertaking to derive biological exposure metrics from Maxwell's equations of electromagnetism would I be able, eventually, to identify and correct the errors that had been made by electrical engineers and others who had attempted to establish safe limits for exposure to microwave and radio-frequency (RF) and other electromagnetic fields in the non-ionizing part of the spectrum.

I've worked on this for a number of years, but in 2004 had finally accomplished enough that I presented a paper on this topic at the June meeting of the Bioelectromagnetics Society (BEMS) which took place in Washington, DC, five months ago. Dr. Robert Cleveland, an FCC employee in the Office of Engineering and Technology, is active in this organization and attended the meeting, but I don't think he took the time to study my poster paper presented at this meeting.

In my poster paper I provided a mathematical basis for a variety of assertions. What it all means, in a nutshell, is that *existing voluntary consensus standards for protection against radio-frequency electromagnetic fields/radiation are **inadequate** to protect mammalian health completely!* In other words, it is possible to comply with these voluntary consensus standards (and also with the FCC emission regulations) but *still* have people get sick from the exposure they experience!

In the foregoing sentence, I had in mind the electromagnetic field generated by a transmitting antenna. Electrical engineers call this an "efficient antenna field". When radio-frequency currents are present on electric wires, such as a long electric power line, a very *different* kind of electromagnetic field is generated, one that electrical engineers call an "inefficient antenna field".

Power line carrier (PLC) and broadband on power lines (BPL) both generate an "inefficient antenna field" around the electrical wire. My investigation has satisfied me that, when all other factors (such as input power and frequency) are equivalent, an "inefficient antenna field" will be ***much*** more hazardous to health than an "efficient antenna field"!

Not only do these two types of field pose different degrees of hazard to mammalian health, they also pose different challenges when it comes to the task of making a meaningful measurement of the hazard or risk that they pose. We know how to take measurements on efficient antenna fields but there are unsolved difficulties associated with doing this on inefficient antenna fields.

I rather hastily assembled the information on the enclosed sheet at the end of October, after the FCC had issued its announcement that was intended to give free rein to anyone who wanted to implement BPL. I wanted to make it apparent that we have enough scientific information ***right now*** to say that it can be predicted that BPL will pose a health hazard to people, if they spend much time close to wires that carry it. Since electric power lines supply electricity to almost every residence and place of work in the USA, this means that ***almost every human being*** in the USA is going to be exposed to the radio-frequency fields generated by BPL, wherever BPL is deployed. So the FCC is proceeding to let loose on the residents of the USA a horrific hazard to their health!

There is ***already*** too much high-frequency current on building electrical wiring—***more*** than is compatible with good health! The still unpublished report by Dr. Daniel Muller, referred to in the enclosed sheet, makes this clear. With people *already* suffering ill health because of the RF current on the electrical wiring in their homes, the FCC is now acting to add ***still more*** of this *RF pollution*, at even ***higher*** (thus ***more damaging***) frequencies!

If effective action is not taken by the American people, the FCC will sicken us all. (Does the FCC think that health care costs are not yet high enough? Most people and organizations I talk to think that health care costs are *much too high!* Yet it hasn't dawned on them that the way to drive health care costs down, long-term, is to reduce the incidence of sickness in the population. It is apparent to me that, here in Wisconsin, illness related to the electric power system has been on the rise for several decades. Complaints to the Public Service Commission of Wisconsin, the state agency that regulates electric utilities, are ineffective for a variety of reasons, one being that this state agency has asserted that it has no legal authority to regulate RF on electric power lines, because that authority resides with the FCC.

The situation in Wisconsin is not much different from the situation in other states. I happen to be most familiar with the situation in Wisconsin because I live in Wisconsin and therefore have paid attention to what has been happening here. At present, companies providing electric power to their customers in the state of Wisconsin are spreading disease throughout the state. This means that their electrical distribution lines are functioning as *vectors of disease!*

It doesn't have to be this way! A hundred years ago, electric power was healthful: electric power lines were ***not*** vectors of disease, and electricity—apart from its electrocution hazard—was *entirely beneficial* to the population!

This is ***not*** true ***today!*** The primary need of the American people at this time, with respect to electric power, is *electricity that is **not** hazardous to mammalian health!* What we need is ***less*** *high-frequency and RF pollution on our electric power lines,* ***not more!***

At present, the principal sources of RF pollution on building electrical wiring are the electrical appliances and other electrical equipment in the building that constitute the customer's electrical load, because the design of such electrical equipment since the middle 1970s is such as to ensure that most of it constitutes a ***nonlinear electrical load*** on the system. Electric power companies do generate *some* RF pollution (at substations, such as by the switching of capacitor banks, for example), but the greatest amount originates from the customer's own electrical equipment that behaves as a nonlinear load. Computers, television sets, and dimmer switches are the most common examples of equipment that constitutes a nonlinear load. Under these circumstances, if the customer installs trapping filters to isolate the high frequencies and keep them off the electrical wiring in the building, the customer accomplishes two things: he improves the quality of the electrical environment inside the building, which helps to ensure that the environment inside the building is not harmful to health; and in doing so, he prevents his building and the equipment inside it from becoming a source of RF pollution on the distribution wires belonging to the electric company that supplies his electricity!

To demonstrate that I am discussing a real-world problem, and not a hypothetical one, I enclose copies of two newspaper stories about what happened in two schools in rural western Wisconsin. together with an essay written by the principal of one of the schools. In both schools, the introduction of capacitors that trap RF resulted in a rapid and widespread improvement in the health of the teachers, students and staff at the school. Angela Olstad's essay makes it exceedingly clear that the installation of the capacitor filters produced a ***prompt outbreak of good health!***

Now consider what the situation would be with BPL in use. The electric power company would then be delivering ***seriously RF-polluted electric power*** over its distribution lines to ***all its customers!*** Based on experience to date, I can confidently predict that a prompt decline in the health of most customers would occur, because the RF-polluted electric power would now be present on both electrical distribution lines and on the building electrical wiring of customers' homes and office buildings and factories. These electrical distribution wires would now be functioning as ***vectors of disease,*** and customers would have a legitimate reason for suing their electric power company for providing them electric power of such ***poor quality*** as to render their homes ***unfit for human habitation!***

You may want to know whether there is any way that BPL can be implemented in a manner that is safe, and does not threaten the health of people. The answer is a qualified *yes* (or a qualified *no*, depending on your viewpoint). But this topic is becoming too technical for discussion by letter. I suggest that the FCC, if it is interested in exploring these issues further, consider taking steps to ensure the education of its technical personnel in this area. Otherwise, the FCC will risk seriously endangering the health of almost all Americans in the years ahead.

I appreciate your interest in putting the benefits of high technology at the disposal of *all* Americans equally, Commissioner Martin. We need people in government who are willing to work to promote change, and to ensure that these benefits are as available to the poor as to the wealthy. BPL does indeed offer a glorious vision of the future.

But please remember that there are two sides to every coin. Only 110 years ago, the world was electrified by a report of the discovery of X-rays, which can make visible the skeleton of a living person. The benefit from X-rays was immediately obvious.

Did you know that a number of people were horribly injured by X-rays, before the hazard to human health that they pose became evident? Some individuals died early, horrible deaths from chronic exposure to X-rays.

An eager desire for benefits must be tempered with care, concern, and caution, if we are to avoid doing unintended damage. This is why the lawsuit that will be filed against the FCC regarding BPL may turn out to be a blessing in disguise.

The Islamic terrorists are bad enough! We certainly *don't* need the agencies of our government behaving toward us like terrorists, too!

Yours for a more healthful environment,

Marjorie Lundquist

Marjorie Lundquist, Ph.D.
Bioelectromagnetic Hygienist

Enc.: copy of my letter of November 12, 2004, to Michael D. Gallagher, NTIA
fact sheet (compiled by Marjorie Lundquist)
story published February 12, 2004, in the **Melrose Chronicle** (Wisconsin)
essay by Angela Olstad, building principal and 4th grade teacher, Mindoro school (WI)
story published September 13, 2004, in the **West Salem Coulee News** (Wisconsin)

xc: Mike Leavitt, EPA Administrator
Norbert Hankin, EPA
Joseph Bowman, Ph.D., Head, Non-Ionizing Radiation Research, NIOSH, Cincinnati, OH

Marjorie Lundquist, Ph.D.
Bioelectromagnetic Hygienist
P. O. Box 11831
Milwaukee, WI 53211-0831

marlundquist@usa.net

November 15, 2004

Jonathan S. Adelstein, Commissioner
Federal Communications Commission
445 – 12th Street, S.W.
Washington DC 20554

Dear Commissioner Adelstein:

For your information, I have it on good authority that the FCC is going to be sued with respect to its action on BPL. (I'm not the one who will be suing, but I don't mind telling you that I have been encouraging a lawsuit against the FCC for its action in approving BPL. If Chairman Powell has shared with you my letter to him of October 28th, you will understand why I feel so strongly about halting BPL.)

I have studied the hazard to the health of living creatures (primarily mammals) for over twenty years, and have learned a lot about electromagnetic fields and electromagnetic field theory in that time. I'm sure I don't know as much about monitoring for FCC compliance as the people working for the FCC in its Office of Engineering and Technology do, but I think I probably know a bit more than they do about why one type of electromagnetic field poses a higher or lower hazard to mammalian health than another.

The major reason why I began my study of this about a quarter of a century ago was that I came to the conclusion that a major scientific error had pervaded the scientific research that had been done up to that point. I didn't know what the error was, or when it had occurred. But the experience I'd acquired while teaching myself computer programming convinced me that only by undertaking to derive biological exposure metrics from Maxwell's equations of electromagnetism would I be able, eventually, to identify and correct the errors that had been made by electrical engineers and others who had attempted to establish safe limits for exposure to microwave and radio-frequency (RF) and other electromagnetic fields in the non-ionizing part of the spectrum.

I've worked on this for a number of years, but in 2004 had finally accomplished enough that I presented a paper on this topic at the June meeting of the Bioelectromagnetics Society (BEMS) which took place in Washington, DC, five months ago. Dr. Robert Cleveland, an FCC employee in the Office of Engineering and Technology, is active in this organization and attended the meeting, but I don't think he took the time to study my poster paper presented at this meeting.

In my poster paper I provided a mathematical basis for a variety of assertions. What it all means, in a nutshell, is that *existing voluntary consensus standards for protection against radio-frequency electromagnetic fields/radiation are* ***inadequate*** *to protect mammalian health completely!* In other words, it is possible to comply with these voluntary consensus standards (and also with the FCC emission regulations) but *still* have people get sick from the exposure they experience!

In the foregoing sentence, I had in mind the electromagnetic field generated by a transmitting antenna. Electrical engineers call this an "efficient antenna field". When radio-frequency currents are present on electric wires, such as a long electric power line, a very *different* kind of electromagnetic field is generated, one that electrical engineers call an "inefficient antenna field".

Power line carrier (PLC) and broadband on power lines (BPL) both generate an "inefficient antenna field" around the electrical wire. My investigation has satisfied me that, when all other factors (such as input power and frequency) are equivalent, an "inefficient antenna field" will be ***much*** more hazardous to health than an "efficient antenna field"!

Not only do these two types of field pose different degrees of hazard to mammalian health, they also pose different challenges when it comes to the task of making a meaningful measurement of the hazard or risk that they pose. We know how to take measurements on efficient antenna fields but there are unsolved difficulties associated with doing this on inefficient antenna fields.

I rather hastily assembled the information on the enclosed sheet at the end of October, after the FCC had issued its announcement that was intended to give free rein to anyone who wanted to implement BPL. I wanted to make it apparent that we have enough scientific information ***right now*** to say that it can be predicted that BPL will pose a health hazard to people, if they spend much time close to wires that carry it. Since electric power lines supply electricity to almost every residence and place of work in the USA, this means that ***almost every human being*** in the USA is going to be exposed to the radio-frequency fields generated by BPL, wherever BPL is deployed. So the FCC is proceeding to let loose on the residents of the USA a horrific hazard to their health!

There is ***already*** too much high-frequency current on building electrical wiring—***more*** than is compatible with good health! The still unpublished report by Dr. Daniel Muller, referred to in the enclosed sheet, makes this clear. With people *already* suffering ill health because of the RF current on the electrical wiring in their homes, the FCC is now acting to add ***still more*** of this *RF pollution*, at even ***higher*** (thus ***more damaging***) frequencies!

If effective action is not taken by the American people, the FCC will sicken us all. (Does the FCC think that health care costs are not yet high enough? Most people and organizations I talk to think that health care costs are *much too high!* Yet it hasn't dawned on them that the way to drive health care costs down, long-term, is to reduce the incidence of sickness in the population. It is apparent to me that, here in Wisconsin, illness related to the electric power system has been on the rise for several decades. Complaints to the Public Service Commission of Wisconsin, the state agency that regulates electric utilities, are ineffective for a variety of reasons, one being that this state agency has asserted that it has no legal authority to regulate RF on electric power lines, because that authority resides with the FCC.

The situation in Wisconsin is not much different from the situation in other states. I happen to be most familiar with the situation in Wisconsin because I live in Wisconsin and therefore have paid attention to what has been happening here. At present, companies providing electric power to their customers in the state of Wisconsin are spreading disease throughout the state. This means that their electrical distribution lines are functioning as *vectors of disease!*

It doesn't have to be this way! A hundred years ago, electric power was healthful: electric power lines were ***not*** vectors of disease, and electricity—apart from its electrocution hazard—was *entirely beneficial* to the population!

This is ***not*** true ***today!*** The primary need of the American people at this time, with respect to electric power, is *electricity that is **not** hazardous to mammalian health!* What we need is ***less*** *high-frequency and RF pollution on our electric power lines, **not more!***

At present, the principal sources of RF pollution on building electrical wiring are the electrical appliances and other electrical equipment in the building that constitute the customer's electrical load, because the design of such electrical equipment since the middle 1970s is such as to ensure that most of it constitutes a ***nonlinear electrical load*** on the system. Electric power companies do generate *some* RF pollution (at substations, such as by the switching of capacitor banks, for example), but the greatest amount originates from the customer's own electrical equipment that behaves as a nonlinear load. Computers, television sets, and dimmer switches are the most common examples of equipment that constitutes a nonlinear load. Under these circumstances, if the customer installs trapping filters to isolate the high frequencies and keep them off the electrical wiring in the building, the customer accomplishes two things: he improves the quality of the electrical environment inside the building, which helps to ensure that the environment inside the building is not harmful to health; and in doing so, he prevents his building and the equipment inside it from becoming a source of RF pollution on the distribution wires belonging to the electric company that supplies his electricity!

To demonstrate that I am discussing a real-world problem, and not a hypothetical one, I enclose copies of two newspaper stories about what happened in two schools in rural western Wisconsin. together with an essay written by the principal of one of the schools. In both schools, the introduction of capacitors that trap RF resulted in a rapid and widespread improvement in the health of the teachers, students and staff at the school. Angela Olstad's essay makes it exceedingly clear that the installation of the capacitor filters produced a ***prompt outbreak of good health!***

Now consider what the situation would be with BPL in use. The electric power company would then be delivering ***seriously RF-polluted electric power*** over its distribution lines to ***all its customers!*** Based on experience to date, I can confidently predict that a prompt decline in the health of most customers would occur, because the RF-polluted electric power would now be present on both electrical distribution lines and on the building electrical wiring of customers' homes and office buildings and factories. These electrical distribution wires would now be functioning as ***vectors of disease***, and customers would have a legitimate reason for suing their electric power company for providing them electric power of such ***poor quality*** as to render their homes ***unfit for human habitation!***

You may want to know whether there is any way that BPL can be implemented in a manner that is safe, and does not threaten the health of people. The answer is a qualified *yes* (or a qualified *no*, depending on your viewpoint). But this topic is becoming too technical for discussion by letter. I suggest that the FCC, if it is interested in exploring these issues further, consider taking steps to ensure the education of its technical personnel in this area. Otherwise, the FCC will risk seriously endangering the health of almost all Americans in the years ahead.

I appreciate your enthusiasm for reaping the benefits of high technology, including the benefit to the economy, Commissioner Adelstein. We need people in government who are willing to work to promote change.

But please remember that there are two sides to every coin. Only 110 years ago, the world was electrified by a report of the discovery of X-rays, which can make visible the skeleton of a living person. The benefit from X-rays was immediately obvious.

But did you know that a number of people were horribly injured by X-rays, before the hazard to health that they pose became evident? Some individuals died early, horrible deaths from chronic exposure to X-rays.

An eager desire for benefits must be tempered with care, concern, and caution, if we are to avoid doing unintended damage. This is why the lawsuit that will be filed against the FCC regarding BPL may turn out to be a blessing in disguise.

The Islamic terrorists are bad enough! We certainly *don't* need the agencies of our government behaving toward us like terrorists, too!

Yours for a more healthful environment,

Marjorie Lundquist

Marjorie Lundquist, Ph.D.
Bioelectromagnetic Hygienist

Enc.: copy of my letter of November 12, 2004, to Michael D. Gallagher, NTIA
fact sheet (compiled by Marjorie Lundquist)
story published February 12, 2004, in the **Melrose Chronicle** (Wisconsin)
essay by Angela Olstad, building principal and 4th grade teacher, Mindoro school (WI)
story published September 13, 2004, in the **West Salem Coulee News** (Wisconsin)

xc: Mike Leavitt, EPA Administrator
Norbert Hankin, EPA
Joseph Bowman, Ph.D., Head, Non-Ionizing Radiation Research, NIOSH, Cincinnati, OH